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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/657,386

09/08/2000

Toshiaki Yoshihara

1100.64726

3309

24978

7590

11/13/2003

GREER, BURNS & CRAIN
300 S WACKER DR
25TH FLOOR
CHICAGO, IL 60606

EXAMINER

AKKAPEDDI, PRASAD R

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 11/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/657,386

Applicant(s)

YOSHIHARA ET AL.

Examiner

Prasad R Akkapeddi

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/21/2003 has been entered.

Claim Objections

2. Claim 1 is objected to because of the following informalities: It recites 'a maximum driving voltage', which makes the claim indefinite. A numeric quantity for the maximum driving voltage needs to be specified. Appropriate correction is required.
3. Claims 2,6,10 and 14 objected to because of the following informalities: The unit for the dielectric constant is not specified. Appropriate correction is required.
4. Claim 9 is objected to because of the following informalities: change the unit from '10mC/cmsup2' to '10 nC/cmsup2'. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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6. Claims 1,2,5,6,9,10,13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishi et al. (Nishi) (U.S. Patent No. 5,541,747).

As to claim 1: Nishi discloses a liquid crystal display (Fig. 14) having a pair of substrates (11 and 12), liquid crystal element (17) with spontaneous polarization, a pixel electrode (13), a switching element (TFT) for driving the liquid crystal. Nishi discloses that an amount of charge per unit area supplied is twice the product of spontaneous polarization of the liquid crystal material and the pixel area. In practice, it is necessary that the electric charge is 1 to 5 times is supplied (col. 9, lines 3-15). Hence the disclosure, when rewritten by mathematically reversing reads: the spontaneous polarization of the liquid crystal is a magnitude of either equal to or less than (i.e., not more than) $\frac{1}{2}$ of a quantity of charge injected into a liquid crystal element corresponding to a pixel. The amount of charge depends on the driving voltage. Nishi also discloses the behavior of spontaneous polarization when a certain voltage is exceeded (i.e., a maximum driving voltage) (col. 12, lines 16-20). Hence the teachings of Nishi read on the recited limitation in the instant claim 1.

As to claims 2,6,10 and 14: Nishi discloses the relationship between the dielectric constant and the spontaneous polarization (col. 17, lines 3-10) and teaches that the dielectric constant varies with the spontaneous polarization and for a spontaneous polarization value of 12, the dielectric constant of the liquid crystal material is 106 pF/m (more than 3), which reads on the instant claims of the dielectric constant being not less than 3. Since the dielectric constant

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depends on spontaneous polarization (eq.3), any other value for the dielectric constant can also be chosen that is not less than 3, by varying the spontaneous polarization.

As to claims 5, 9 and 13: Nishi discloses spontaneous polarization values of less than 10 nC/cm² preferably less than 8 nC/cm² (col. 13, lines 33-39), which read on the instant claims of not more than 7, 10 and 15 nC/cm².

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3-4, 7-8, 11-12 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi in view of Ishii et al. (Ishii) (U.S. Patent No. 5,642,214).

As to claims 3-4, 7-8, 11-12 and 15-16: Nishi does not disclose the use of color filters of three primary colors or the use of three separate light sources emitting light rays of three primary colors and switching. It is quite well known in the art that three primary colors for illumination can be obtained either from a single white light source having filters at the primary color wavelengths or three separate light sources emitting at three primary wavelengths.

However, Ishii in disclosing an optical modulating element consisting of ferroelectric liquid crystal, discloses a lamp source (36) the use of three filters

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(red, green and blue) (col.3, line 2) and light sources for the three primary colors and switching them sequentially, (Col 3, line 67) and (Col 4, lines1 and 17-27).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the separate light sources disclosed by Ishii to the display device disclosed by Nishi for an alternate way of obtaining light sources having the three primary colors and such a use of separate light sources will result in an increase in resolution for these devices (col. 4, line 1) and also for enabling miniaturization of construction and improvement of indication quality (col. 4, lines 30-35).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 703-305-4767. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 703-305-3492. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0530.

PRP

Prasad R Akkapeddi
Examiner
Art Unit 2871

T-Chowdhury
Primary Examiner